IN THE SPECIFICATION:

Please amend the specification as follows:

Please substitute the paragraph beginning at page 1 line 22, and ending on page 2, line 5, with the following.

A2

-- A semiconductor exposure apparatus is an apparatus for transferring a negative plate (reticle) having a circuit pattern ~~on~~ onto a substrate (silicon wafer). During the transferring, a projection lens is used for forming an image of the reticle pattern on the wafer, and high resolution of the projection lens is required for forming a highly integrated circuit. Accordingly, the lens for the semiconductor exposure apparatus is supported to have small aberration. --

Please substitute the paragraph beginning at page 2, line 14, with the following.

A3

-- Fig. 11 illustrates part of an optical system of a conventional semiconductor exposure apparatus and ~~is showing~~ shows a structural concept of the lens barrel. In the drawing, plural lenses 101 and 102 are fixed to metallic frames 103 and 104 for holding the lenses, which are further placed within a supporting member 105 and are urged and fixed thereto from upward movement by retaining screw-rings 107 and 108, respectively. --

Please substitute the paragraph beginning at page 3, line 17, and ending on page 4, line 6, with the following.

A4

-- Also, in the conventional example mentioned above, the lens placed within the inner radius of the metallic frame becomes deformed due to gravity; by reasons that the direction and

amount of such deformation depend on the figure of a lens placing portion and it is difficult to process the planar figure of the lens placing portion with a higher accuracy than that of the lens, and it cannot be assumed in advance that how the lens abutting the lens placing portion becomes deformed because each workpiece of the portion differs from one another, it is necessary that various kinds of aberration be corrected by predetermined adjustment of the lens posture or positions after checking the optical performance in the assembled optical system, which requires high accuracy in the deformation, resulting in an increased number of steps for ~~assembling~~ assembly and adjustment. --

Con'd A4

Please substitute the paragraph beginning at page 6, line 7, with the following.

A5

-- In accordance with a third aspect of the present invention, there is provided a method for manufacturing semiconductor devices comprising an exposing step performed by an exposure apparatus according to the second aspect of the present invention. --

Please substitute the paragraph beginning at page 6, line 24, and ending on page 7, line 7, with the following.

A6

-- In accordance with a fifth aspect of the present invention, there is provided a supporting structure for supporting an optical element comprising: an optical element made from fluorite; a first supporting member for supporting the optical element; and a second supporting member made from a material different from that of the first supporting member ~~for supporting the first~~

Cont'd A6

~~supporting member~~, wherein the thermal expansion difference between the optical element and the first supporting member is within ± 10%. --

Please substitute the paragraph beginning at page 9, line 9, and ending on page 10, line 12, with the following.

A7

-- An embodiment of the present invention, which discloses a supporting structure of optical elements, an optical apparatus such as an exposure apparatus constructed by using the supporting structure, and a manufacturing method of manufacturing a semiconductor device, etc., using the apparatus, can reduce the unnecessary lens surface deformation due to the strain produced by changes in ambient temperature and during the assembling so as to obtain ~~a~~ stable, high resolution with small aberration by virtue of the above-mentioned structure. For example, ~~using~~ use of the above-mentioned structure reduces the deformation produced in an optical element by the thermal strain due to ambient temperature changes in the optical apparatus and a temperature increase in the optical element by light energy absorption. Using the structure also reduces the difference in the thermal expansion coefficient so as to decrease the thermal deformation of the optical element. Furthermore, using the structure reduces the stress produced when an elastic portion absorbs the thermal deformation difference between a first supporting member and a second supporting member, thereby improving the efficiency in absorbing the deformation. Since, by using the structure, an eccentricity of the optical element is prevented or the unnecessary thermal deformation affecting the optical element can be symmetrized about the axis even though it is very small, the inverse effect affecting the optical performance can be

Cont'd A7

effectively reduced. Also, by using the structure, an optical apparatus or manufacturing apparatus for manufacturing semiconductors, etc., can be achieved so as to have ~~a~~ stable, high resolution with small aberration. --

Please substitute the paragraph beginning at page 10, line 20, with the following.

A8

-- The drawing shows a quartz lens 1 and the lens supporting member 11 made from invar, which is a nickel alloy having a thermal expansion coefficient substantially identical to that of quartz. In addition, the lens 1 is fixed to the supporting member 11 by adhesion. --

Please substitute the paragraph beginning at page 11, line 2, with the following.

A9

-- In the peripheral portions of the supporting member 11, plural cut-outs are formed so as to arrange elastic member 12 therein, which are leaf springs. In the elastic member 1, both plate ends are connected to the supporting member 11 while the center thereof is connected to the supporting member 3. By this supporting structure, the elastic member 12 has small elasticity relative to the optical elements in the radial direction. --

Please substitute the paragraph beginning at page 12, line 5, with the following.

A10

-- The material of the elastic member 12 is preferably identical to that of the supporting member 11; however, it may be another material such as a metallic material for springs such as stainless steel and a non-metallic material such as zirconium. This is because ~~that~~ when the rigidity of the supporting member 11 is much higher than that of the elastic member 12, the

thermal strain due to the thermal expansion coefficient difference between both the materials does not have a serious influence on the entire system. Similarly, the material of the elastic member 22 is preferably identical to that of the supporting member 21; however, it may be another material. Fig. 2 illustrates the case that three elastic members are arranged; the number of elastic members is preferably three; however, it is not limited to this; it may be two or more. In any case, in circumferences of the supporting members 11 and 21, the elastic members 12 and 22 are respectively arranged at equal intervals so that the eccentricity of the supporting members 11 and 21 due to the thermal strain can be prevented. --

Cont'd A10

Please substitute the paragraph beginning at page 13, line 18, and ending on page 14, line 13, with the following.

-- The optimum materials of the supporting member may be selected in consideration of these conditions. For example, if these conditions permit, alumina, ceramic iron may be selected as the material of the supporting member 11 for the quartz lens, even though these materials have a thermal expansion coefficient being slightly different from quartz. In any case, a material having a thermal expansion coefficient being closer to that of the lens than that of the supporting member 3 may be used for the supporting members 11 and 21, and thereby reducing harmful deformation of the lens surface figure due to temperature changes of the lens and increasing the temperature stability of the optical system. The supporting members 11 and 21 also do not directly contact the supporting member 3 in axial and radial directions and both the supporting members 11 and 21 are supported via the elastic members 12 and 22, respectively. This means

A11

Cond A11

that an external force to the supporting member 3 or the deformation thereof due to the weight is not directly transmitted to the supporting members 11 and 21 so as to suppress the surface figure strains of the lenses 1 and 2 due to the deformation of the supporting members 11 and 21. --

Please substitute the paragraph beginning at page 16, line 20, and ending on page 17, line 12, with the following.

A12

-- A material of the member 21 for supporting the fluorite lens 2 may be preferably selected from an alloy of iron-chromium-nickel such as so-called 18-8 stainless steel, an alloy of copper-tin-phosphorus, which is called ~~as~~ copper or phosphor bronze, an alloy of nickel-iron-manganese-copper, which is called copper or white copper, an alloy of nickel-chromium, and an alloy including aluminum as a principal ingredient such as an aluminum die-casting alloy of aluminum-silicon-copper. When being applied especially to the exposure apparatus, since the energy of a light beam for exposure is absorbed by the lens so as to generate heat, a copper alloy having a high thermal conductivity is more preferable. The thermal expansion coefficient of fluorite is approximately 19 ppm; by simulation, the inventor confirmed that by using materials having the same coefficient as this value with errors within ± 10%, harmful ~~effect~~ effects due to temperature on the lens can be substantially suppressed. --

Please substitute the paragraph beginning at page 21, line 5, with the following.

A13

-- Between the quartz lens 5 and the supporting member 51, there is not an interposed elastic member for absorbing the thermal expansion difference, so that upon changes in ambient

Cont'd A13

temperature, expansion or shrinkage is produced therein differently from each other so as to deform the lens figure; however, since the clearance between them is uniformly filled with adhesive along the whole circumference of the lens, it was confirmed by computation and experiments that the deformation is limited to being very small ~~one~~ and being symmetrical about the axis, and the 3θ figure is not changed. --

Please substitute the paragraph beginning at page 22, line 24, and ending on page 23, line 7, with the following.

A14

-- Since each lens 5 is supported by the supporting member 51 at three points, gravity deformation of the 3θ is produced therein in the gravity direction, then, the lens barrel unit is rotated about the optical axis at a predetermined angle so as to be fixed so that the aberration produced in each lens by the gravity deformation is cancelled from the entire optical system so as to have a desired optical performance. In this embodiment, each lens barrel unit is fixed by relatively shifting it by 60°. --

Please substitute the paragraph beginning at page 26, line 20, and ending on page 27, line 3, with the following.

A15

-- A material of the member for supporting the fluorite lens may be preferably selected from an alloy of iron-chromium-nickel such as so-called 18-8 stainless steel, an alloy of copper-tin-phosphorus, which is called ~~as~~ copper or phosphor bronze, an alloy of nickel-iron-manganese-copper, which is called copper or white copper, an alloy of nickel-chromium, and an alloy

Cond A15

including aluminum as a principal ingredient such as an aluminum die-casing alloy of aluminum-silicon-copper. --